

CLAIMS

WE CLAIM:

1. A method of providing electrical system monitoring and diagnosis,
2 comprising:
 providing a motor controller including solid state switches for controlling
4 application of power to the motor, and a control circuit for controlling operation of the solid state
switches and for measuring electrical power system characteristics relating to operation of the
6 solid state switches;
 providing an external monitoring and diagnostic device;
8 establishing communications between the control circuit and the external
monitoring and diagnostic device; and
10 periodically transferring parameters of the measured electrical power system
characteristics from the control circuit to the external monitoring and diagnostic device to
12 monitor electrical power system characteristics in real time.
2. The method of providing electrical system monitoring and diagnosis of
2 claim 1 wherein providing a motor controller comprises providing a control circuit including a
programmed processor for commanding operation of the solid state switches and a memory

4 connected to the programmed processor for storing the parameters of the measured electrical
power system characteristics.

3. The method of providing electrical system monitoring and diagnosis of
2 claim 2 wherein transferring parameters of the measured electrical power system characteristics
comprises reading the stored parameters of the measured electrical power system characteristics
4 from the memory.

4. The method of providing electrical system monitoring and diagnosis
2 device of claim 1 wherein providing an external monitoring and diagnostic device comprises
providing a computer having a memory for storing the transferred parameters.

5. The method of providing electrical system monitoring and diagnosis of
2 claim 1 wherein providing an external monitoring and diagnostic device comprises providing a
personal digital assistant having a memory for storing the transferred parameters.

6. The method of providing electrical system monitoring and diagnosis of
2 claim 1 further comprising printing a listing of the transferred parameters of the measured
electrical power system characteristics.

7. The method of providing electrical system monitoring and diagnosis of
2 claim 1 wherein periodically transferring parameters of the measured electrical power system
characteristics comprises transferring the parameters at select time intervals.

8. The method of providing electrical system monitoring and diagnosis of
2 claim 1 wherein the control circuit measures line voltage, motor voltage and motor current.

9. The method of providing electrical system monitoring and diagnosis of
2 claim 1 wherein establishing communications between the control circuit and the external
monitoring and diagnostic device comprises providing an infrared communication path between
4 the control circuit and the external monitoring and diagnostic device.

10. The method of providing electrical system monitoring and diagnosis of
2 claim 1 wherein establishing communications between the control circuit and the external
monitoring and diagnostic device comprises providing a wired communication path between the
4 control circuit and the external monitoring and diagnostic device.

11. A motor controller system for monitoring and diagnosing electrical power
2 system characteristics, comprising:

a motor controller including solid state switches for controlling application of
4 power to a motor, and a control circuit for controlling operation of the solid state switches and
for measuring electrical power system characteristics relating to operation of the solid state
6 switches;

an external monitoring and diagnostic device including a memory for storing
8 parameters of the measured electrical power system characteristics and an interface for
communication with the motor controller; and

10 means operatively associated with the control circuit and the external monitoring
and diagnostic device for transferring parameters of the measured electrical power system
12 characteristics from the control circuit to the external monitoring and diagnostic device to
monitor electrical power system characteristics in real time.

12. The motor controller system of claim 11 wherein the control circuit
2 comprises a programmed processor for commanding operation of the solid state switches and a
memory connected to the programmed processor for storing the parameters of the measured
4 electrical power system characteristics.

13. The motor controller system of claim 12 wherein the transferring means
2 comprises means for reading the stored parameters of the measured electrical power system
characteristics from the memory.

14. The motor controller system of claim 11 wherein the external monitoring
2 and diagnostic device comprises a computer having a memory for storing the transferred
parameters.

15. The motor controller system of claim 11 wherein the external monitoring
2 and diagnostic device comprises a personal digital assistant having a memory for storing the
transferred parameters.

16. The motor controller system of claim 11 further comprising printer
2 operatively associated with the external monitoring and diagnostic device for printing a listing of
the transferred parameters of the measured electrical power system characteristics.

17. The motor controller system of claim 11 wherein the transferring means
2 transfers the parameters at select time intervals.

18. The motor controller system of claim 11 wherein the control circuit
2 measures line voltage, motor voltage and motor current.

19. The motor controller system of claim 11 wherein the transferring means
2 comprises an infrared communication path between the control circuit and the external
monitoring and diagnostic device.

20. The motor controller system of claim 11 wherein the transferring means
2 comprises a wired communication path between the control circuit and the external monitoring
and diagnostic device.

21. A soft starter system for monitoring and diagnosing electrical power

2 system characteristics, comprising:

4 a motor controller including solid state switches for controlling application of
power to a motor, and a control circuit for controlling operation of the solid state switches, the
control circuit comprising a programmed processor for commanding operation of the solid state
6 switches and for measuring electrical power system characteristics relating to operation of the
solid state switches, and a memory connected to the programmed processor storing parameters of
8 the measured electrical power system characteristics;

an external monitoring and diagnostic device including a memory for storing
10 parameters of the measured electrical power system characteristics and an interface for
communication with the motor controller; and

12 a monitoring and diagnostic program operatively implemented in the external
monitoring and diagnostic device for transferring parameters of the measured electrical power
14 system characteristics from the control circuit to the external monitoring and diagnostic device
to monitor electrical power system characteristics in real time.

22. The soft starter system of claim 21 wherein the external monitoring and

2 diagnostic device comprises a computer having a memory for storing the transferred parameters.

23. The soft starter system of claim 21 wherein the external monitoring and
2 diagnostic device comprises a personal digital assistant having a memory for storing the
transferred parameters.

24. The soft starter system of claim 21 wherein the monitoring and diagnostic
2 program is operable to upload the parameters from the controller memory to the external
monitoring and diagnostic device memory.

25. The soft starter system of claim 21 wherein the control circuit measures
2 line voltage, motor voltage and motor current.

26. The soft starter system of claim 21 wherein the interface comprises a
2 wireless interface.

27. The soft starter system of claim 26 wherein the interface comprises a
2 wired interface.